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10 UNITED STATES DISTRICT COURT

11 NORTHERN DISTRICT OF CALIFORNIA, SAN FRANCISCO DIVISION

12 WAYMO LLC,

Plaintiff,

13 vs.

UBER TECHNOLOGIES, INC.;

14 OTTOMOTTO LLC; OTTO TRUCKING

LLC,

15 Defendants.

CASE NO. _____

COMPLAINT

**1. VIOLATION OF DEFENSE OF
TRADE SECRETS ACT**

**2. VIOLATION OF CALIFORNIA
UNIFORM TRADE SECRET ACT**

3. PATENT INFRINGEMENT

**4. VIOLATION OF CAL. BUS & PROF.
CODE SECTION 17200**

DEMAND FOR JURY TRIAL

1 Plaintiff Waymo LLC (“Waymo”), by and through their attorneys, and for their Complaint
2 against Uber Technologies, Inc. (“Uber”), Ottomotto LLC, and Otto Trucking LLC (together,
3 “Otto”) (collectively, “Defendants”), hereby allege as follows:

4 **I. INTRODUCTION**

5 1. This is an action for trade secret misappropriation, patent infringement, and unfair
6 competition relating to Waymo’s self-driving car technology. Waymo strongly believes in the
7 benefits of fair competition, particularly in a nascent field such as self-driving vehicles. Self-
8 driving cars have the potential to transform mobility for millions of people as well as become a
9 trillion dollar industry. Fair competition spurs new technical innovation, but what has happened
10 here is not fair competition. Instead, Otto and Uber have taken Waymo’s intellectual property so
11 that they could avoid incurring the risk, time, and expense of independently developing their own
12 technology. Ultimately, this calculated theft reportedly netted Otto employees over half a billion
13 dollars and allowed Uber to revive a stalled program, all at Waymo’s expense.

14 2. Waymo developed its own combination of unique laser systems to provide critical
15 information for the operation of fully self-driving vehicles. Waymo experimented with, and
16 ultimately developed, a number of different cost-effective and high-performing laser sensors
17 known as LiDAR. LiDAR is a laser-based scanning and mapping technology that uses the
18 reflection of laser beams off objects to create a real-time 3D image of the world. When mounted
19 on a vehicle and connected to appropriate software, Waymo’s LiDAR sensors enable a vehicle to
20 “see” its surroundings and thereby allow a self-driving vehicle to detect traffic, pedestrians,
21 bicyclists, and any other obstacles a vehicle must be able to see to drive safely. With a 360-degree
22 field of vision, and the ability to see in pitch black, Waymo’s LiDAR sensors can actually detect
23 potential hazards that human drivers would miss. With a goal of bringing self-driving cars to the
24 mass market, Waymo has invested tens of millions of dollars and tens of thousands of hours of
25 engineering time to custom-build the most advanced and cost-effective LiDAR sensors in the
26 industry. Thanks in part to this highly advanced LiDAR technology, Waymo became the first
27 company to complete a fully self-driving trip on public roads in a vehicle without a steering wheel
28

1 and foot pedals. Today, Waymo remains the industry's leader in self-driving hardware and
2 software.

3 3. Waymo was recently – and apparently inadvertently – copied on an email from one
4 of its LiDAR component vendors. The email attached machine drawings of what purports to be an
5 Uber LiDAR circuit board. This circuit board bears a striking resemblance to Waymo's own
6 highly confidential and proprietary design and reflects Waymo trade secrets. As this email shows,
7 Otto and Uber are currently building and deploying (or intending to deploy) LiDAR systems (or
8 system components) using Waymo's trade secret designs. This email also shows that Otto and
9 Uber's LiDAR systems infringe multiple LiDAR technology patents awarded to Waymo.

10 4. Waymo has uncovered evidence that Anthony Levandowski, a former manager in
11 Waymo's self-driving car project – now leading the same effort for Uber – downloaded more than
12 14,000 highly confidential and proprietary files shortly before his resignation. The 14,000 files
13 included a wide range of highly confidential files, including Waymo's LiDAR circuit board
14 designs. Mr. Levandowski took extraordinary efforts to raid Waymo's design server and then
15 conceal his activities. In December 2015, Mr. Levandowski specifically searched for and then
16 installed specialized software onto his company-issued laptop in order to access the server that
17 stores these particular files. Once Mr. Levandowski accessed this server, he downloaded the
18 14,000 files, representing approximately 9.7 GB of highly confidential data. Then he attached an
19 external drive to the laptop for a period of eight hours. He installed a new operating system that
20 would have the effect of reformatting his laptop, attempting to erase any forensic fingerprints that
21 would show what he did with Waymo's valuable LiDAR designs once they had been downloaded
22 to his computer. After Mr. Levandowski wiped this laptop, he only used it for a few minutes, and
23 then inexplicably never used it again.

24 5. In the months leading to the mass download of files, Mr. Levandowski told
25 colleagues that he had plans to set up a new, self-driving vehicle company. In fact, Mr.
26 Levandowski appears to have taken multiple steps to maximize his profit and set up his own new
27 venture – which eventually became Otto – before leaving Waymo in January 2016. In addition to
28 downloading Waymo's design files and proprietary information, Mr. Levandowski set up a

1 competing company named “280 Systems” (which later became Otto) before he left, under the
2 pretense that 280 Systems would not compete with Waymo.

3 6. A number of Waymo employees subsequently also left to join Anthony
4 Levandowski’s new business, downloading additional Waymo trade secrets in the days and hours
5 prior to their departure. These secrets included confidential supplier lists, manufacturing details
6 and statements of work with highly technical information, all of which reflected the results of
7 Waymo’s months-long, resource-intensive research into suppliers for highly specialized LiDAR
8 sensor components.

9 7. Otto launched publicly in May 2016, and was quickly acquired by Uber in August
10 2016 for \$680 million. (Notably, Otto announced the acquisition shortly after Mr. Levandowski
11 received his final multi-million dollar compensation payment from Google.) As was widely
12 reported at the time, “one of the keys to this acquisition[] could be the LIDAR system that was
13 developed in-house at Otto.”

14 8. Uber’s own attempts to develop self-driving cars started earlier in February 2015
15 with the announcement of a strategic partnership with Carnegie Mellon University and the
16 creation of the Uber Advanced Technologies Center in Pittsburgh. Reports attribute Uber CEO
17 Travis Kalanick’s interest in this technology to a ride in a Google, now Waymo, self-driving car.
18 Uber’s CEO has described self-driving cars as “existential” to the survival of his company.¹ He
19 told reporters: “the entity that’s in first, then rolls out a ride-sharing network that is far cheaper or
20 far higher-quality than Uber’s, then Uber is no longer a thing.” However, by March 2016 reports
21 surfaced that the partnership between CMU and Uber had “stalled.”

22 9. Meanwhile, Waymo had devoted seven years to research and development. It had
23 amassed nearly one and a half million miles of self-driving experience on public roads and billions
24 of miles of test data via simulation. By May 2015, Waymo had also designed and built, from the
25 ground up, the world’s first fully self-driving car without a steering wheel and foot pedals. These
26

27 ¹ Biz Carson, “Travis Kalanick on Uber’s bet on self-driving cars: ‘I can’t be wrong,’” *Business*
28 *Insider*, Aug. 18, 2016, available at <http://www.businessinsider.com/travis-kalanick-interview-on-self-driving-cars-future-driver-jobs-2016-8>.

1 vehicles were equipped with Waymo's own in-house hardware and sensors, including its
2 uniquely-designed LiDAR.

3 10. Instead of developing their own technology in this new space, Defendants stole
4 Waymo's long-term investments and property. While Waymo developed its custom LiDAR
5 systems with sustained effort over many years, Defendants leveraged stolen information to
6 shortcut the process and purportedly build a comparable LiDAR system in only nine months. As
7 of August 2016, Uber had no in-house solution for LiDAR – despite 18 months with their faltering
8 Carnegie Mellon University effort – and they acquired Otto to get it. By September 2016, Uber
9 represented to regulatory authorities in Nevada that it was no longer using an off-the-shelf, or
10 third-party, LiDAR technology, but rather using an “[i]n-house custom built” LiDAR system. The
11 facts outlined above and elaborated further in this complaint show that Uber's LiDAR technology
12 is actually Waymo's LiDAR technology.

13 11. In light of Defendants' misappropriation and infringement of Waymo's LiDAR
14 technology, Waymo brings this Complaint to prevent any further misuse of its proprietary
15 information, to prevent Defendants from harming Waymo's reputation by misusing its technology,
16 to protect the public's confidence in the safety and reliability of self-driving technology that
17 Waymo has long sought to nurture, and to obtain compensation for its damages and for
18 Defendants' unjust enrichment resulting from their unlawful conduct.

19 **II. PARTIES**

20 12. Plaintiff Waymo LLC is a subsidiary of Alphabet Inc. with its principal place of
21 business located in Mountain View, California 94043. Waymo is a self-driving technology
22 company with a mission to make it safe and easy for people and things to move around. Waymo
23 LLC owns all of the patents, trade secrets, and confidential information infringed or
24 misappropriated by Defendants.

25 13. Defendant Uber Technologies, Inc. (“Uber”) is a Delaware company with its
26 principal place of business at 1455 Market Street, San Francisco, California.
27
28

1 14. Waymo is informed and believes that Defendant Ottomotto LLC (f/k/a 280
2 Systems Inc.) is a Delaware limited liability company with its principal place of business located
3 at 737 Harrison Street, San Francisco, California.

4 15. Waymo is informed and believes that Defendant Otto Trucking LLC (f/k/a 280
5 Systems LLC) is a limited liability company with its principal place of business located at 737
6 Harrison Street, San Francisco, California.

7 16. Waymo is informed and believes that Uber acquired Defendants Ottomotto LLC
8 and Otto Trucking LLC in approximately August 2016.

9 17. Waymo is informed and believes that each Defendant acted in all respects pertinent
10 to this action as the agent of the other Defendant, carried out a joint scheme, business plan or
11 policy in all respects pertinent hereto, and that the acts of each Defendant are legally attributable
12 to each of the other Defendants.

13 **III. JURISDICTION, VENUE & INTRADISTRICT ASSIGNMENT**

14 18. This Court has subject matter jurisdiction over Waymo's claims for patent
15 infringement pursuant to the Federal Patent Act, 35 U.S.C. § 101 *et seq.* and 28 U.S.C. §§ 1331
16 and 1338(a). This Court has subject matter jurisdiction over Waymo's federal trade secret claim
17 pursuant to 18 U.S.C. §§ 1836-39 *et seq.* and 28 U.S.C. §§ 1331 and 1343. The Court has
18 supplemental jurisdiction over the state law claim alleged in this Complaint pursuant to 28 U.S.C.
19 § 1367.

20 19. As set forth above, at least one Defendant resides in this judicial district, and all
21 Defendants are residents of the State of California. In addition, a substantial part of the events or
22 omissions giving rise to the claims alleged in this Complaint occurred in this Judicial District.
23 Venue therefore lies in the United States District Court for the Northern District of California
24 pursuant to 28 U.S.C. §§ 1391(b)(1) and (2).

25 20. A substantial part of the events giving rise to the claims alleged in this Complaint
26 occurred in the City and County of San Francisco. For purposes of intradistrict assignment under
27 Civil Local Rules 3-2(c) and 3-5(b), this Intellectual Property Action will be assigned on a district-
28 wide basis.

1 **IV. FACTUAL ALLEGATIONS**

2 **A. Google Pioneers The Self-Driving Car Space**

3 21. Google was the first major U.S. technology firm to recognize the transformative
4 potential and commercial value of vehicle automation, which promises to make transportation
5 safer, cleaner, more efficient, and more widely available.

6 22. Google initiated its self-driving car project in 2009. Before long, Google's self-
7 driving cars had navigated from the Bay Area to Los Angeles, crossed the Golden Gate Bridge,
8 drove the Pacific Coast Highway, and circled Lake Tahoe, logging over 140,000 miles – a first in
9 robotics research at the time.

10 23. Google made its self-driving car project public in 2010, with the following
11 announcement: “Larry and Sergey founded Google because they wanted to help solve really big
12 problems using technology. And one of the big problems we’re working on today is car safety
13 and efficiency. Our goal is to help prevent traffic accidents, free up people’s time and reduce
14 carbon emissions by fundamentally changing car use. So we have developed technology for cars
15 that can drive themselves.”

16 24. In 2014, Google unveiled its own reference vehicle, a two-door fully autonomous
17 car without pedals or a steering wheel. A year later, this prototype made the first ever fully self-
18 driving trip in normal traffic on public roads.

19 25. In 2016, Google’s self-driving car program became Waymo, a stand-alone
20 company operating alongside Google and other technology companies under the umbrella of
21 Alphabet Inc.²

22 26. To date, Waymo’s fleet of self-driving vehicles has logged over 2.5 million miles
23 in autonomous mode on public roads. Measured in time, that equates to over 300 years of human
24 driving experience. And in 2016 alone, Waymo’s systems logged over a billion miles of
25 simulated driving, a feat made possible by Waymo’s in-house simulator and the power of
26 Google’s massive data centers.

27 ² Further references to “Waymo” refer to the self-driving car project from its inception in
28 2009 to the present.

1 27. Waymo uses the data collected from these real-world and simulated miles to
2 (among other things) constantly improve the safety of its system, including its hardware and
3 sensors. This focus on testing and safety has allowed Waymo's self-driving cars to become
4 increasingly capable and robust, with less need for human intervention. As just one illustration of
5 this, the rate of Waymo's safety-related disengagements has fallen from 0.8 disengagements per
6 thousand miles in 2015 to 0.2 disengagements per thousand miles in 2016, representing a four-fold
7 improvement in Waymo's self-driving technology in just 12 months. Today, Waymo believes its
8 self-driving cars are the safest on the road.

9 **B. Waymo Develops Its Own Proprietary LiDAR System Tailored For Mass-**
10 **Marketed Self-Driving Cars**

11 28. Self-driving cars must be able to detect and understand the surrounding
12 environment. With respect to this aspect of vehicle automation, LiDAR – or “Light Detection
13 And Ranging” – uses high-frequency, high-power pulsing lasers to measure distances between one
14 or more sensors and external objects.

15 29. LiDAR hardware built for autonomous vehicles is typically mounted on the
16 exterior of a vehicle and scans the surrounding environment (sometimes in 360 degrees) with an
17 array of lasers. The laser beams reflect off surrounding objects, and data regarding the light that
18 bounces back to designated receivers is recorded. Software analyzes the data in order to create a
19 three-dimensional view of the environment, which is used to identify objects, assess their motion
20 and orientation, predict their behavior, and make driving decisions.

21 30. LiDAR systems are made up of thousands of individual hardware and software
22 components that can be configured in virtually limitless combinations and designs. LiDAR
23 systems adapted for use in self-driving cars became commercially available in approximately
24 2007. Today, most firms in the self-driving space purchase LiDAR systems from third-party
25 providers.

26 31. Waymo, on the other hand, uses *its own* LiDAR systems that are carefully tailored
27 – based on Waymo's extensive research and testing – for use in fully autonomous vehicles in
28 which there is no driver intervention required. Waymo's proprietary LiDAR systems improve the

1 ability of self-driving cars to navigate safely in all environments, including city environments and
2 highly unusual driving scenarios.

3 32. Moreover, by designing its own LiDAR systems, Waymo has driven down costs, a
4 well-known barrier to commercializing self-driving technology. Waymo's improved LiDAR
5 designs are now less than 10% of the cost that benchmark LiDAR systems were just a few years
6 ago, and Waymo expects that mass production of their technology will make it even more
7 affordable.

8 33. One way that Waymo pioneered LiDAR systems with improved performance at
9 lower cost was by innovating a design that, in part, uses a single lens – rather than multiple sets of
10 lenses – to both transmit and receive the collection of laser beams used to scan the surrounding
11 environment. This design greatly simplifies the manufacturing process by eliminating the need to
12 painstakingly align pairs of transmit and receive lenses, with even a slight mis-calibration of a lens
13 pair affecting the accuracy of the system. Waymo was awarded a patent on its design in 2014:
14 United States Patent No. 8,836,922 (“the ’922 patent”) entitled “Devices and Methods for a
15 Rotating LiDAR Platform with a Shared Transmit/Receive Path.”

16 34. Another way that Waymo improved the performance and lowered the cost of
17 LiDAR systems for autonomous vehicles was by simplifying the design of the laser diode firing
18 circuit that is at the heart of any LiDAR system. Waymo invented a design that elegantly
19 simplified the circuit to control the charging and discharging paths of the lasers compared to the
20 more complicated circuit designs otherwise used by the industry. Waymo obtained a patent on
21 this aspect of its LiDAR design in 2016: United States Patent No. 9,368,936 (“the ’936 patent”)
22 entitled “Laser Diode Firing System.”

23 35. As one more example of how Waymo fundamentally advanced LiDAR systems for
24 use in autonomous vehicles, Waymo developed a simplified design for “pre-collimating” (or
25 making parallel) the light output of each laser diode separately before the beams are combined.
26 The increased compactness of this design increases the resolution of the overall LiDAR system.
27 Waymo was awarded a patent on this aspect of its design in 2015: United States Patent No.
28

1 9,086,273 (“the ’273 patent”) entitled “Microrod Compressions of Laser Beam in Combination
2 with Transmit Lens.”

3 36. While patenting these fundamental advances in LiDAR technology, Waymo also
4 accumulated confidential and proprietary intellectual property that it uses in the implementation
5 and manufacture of its LiDAR designs to optimize performance, maximize safety, and minimize
6 cost. Waymo also created a vast amount of confidential and proprietary intellectual property via
7 its exploration of design concepts that ultimately proved too complex or too expensive for the
8 mass market; Waymo’s extensive experience with “dead-end” designs continues to inform the
9 ongoing development of Waymo’s LiDAR systems today. The details actually used in Waymo’s
10 LiDAR designs as well as the lessons learned from Waymo’s years of research and development
11 constitute trade secrets that are highly valuable to Waymo and would be highly valuable to any
12 competitor in the autonomous vehicle space.

13 37. Waymo’s substantial and sustained investment in LiDAR technology over nearly
14 seven years – and the intellectual property that resulted – have made Waymo’s current LiDAR
15 technology the most advanced in the industry. It is unparalleled in performance and safety in all
16 driving environments, including in the most challenging city environments. Yet it is more than
17 90% cheaper than prior benchmark systems, a key driver toward mass market adoption. For these
18 reasons and others, Waymo’s LiDAR technology and the intellectual property associated with it
19 are some of Waymo’s most valuable assets.

20 **C. Uber Is Late To Enter The Self-Driving Car Market**

21 38. Whereas Waymo began developing its self-driving cars in 2009, on information
22 and belief, Uber’s first serious foray into automation was not until six years later when – in
23 February 2015 – Uber announced a partnership with Carnegie Mellon University. According to
24 public reports of the partnership, Uber hired at least 40 CMU faculty members, researchers, and
25 technicians – including the former head of CMU’s National Robotics Engineering Center – to help
26 jump-start an Uber vehicle automation program.

27 39. By early 2016, Uber had hired hundreds of engineers and robotics experts to
28 support the original team from Carnegie Mellon. But the research and development process was

1 slow.³ And with respect to LiDAR technology, Uber's program appeared to rely solely on a third-
 2 party, off-the-shelf LiDAR system manufactured by Velodyne Inc. (the HDL-64E). On
 3 information and belief, Uber's program did not make any significant advances toward designing or
 4 manufacturing its own LiDAR technology for improved performance or lower cost.

5 40. Thus, although Uber came to view its entry into the self-driving car space as an
 6 "existential" imperative,⁴ as of mid-2016, Uber remained more than five years behind in the race
 7 to develop vehicle automation technology suitable for the mass market.

8 **D. Unbeknownst To Waymo, Anthony Levandowski Lays The Foundation For**
 9 **Defendants To Steal Waymo's Intellectual Property Rather Than Compete**
 10 **Fairly In The Autonomous Vehicle Space**

11 41. While Uber's partnership with CMU was floundering, Waymo was continuing to
 12 develop its next-generation proprietary LiDAR technology. But, unbeknownst to Waymo at the
 13 time, Waymo manager Anthony Levandowski was also secretly preparing to launch a competing
 14 vehicle automation venture – a company named "280 Systems," which later would become Otto.

15 42. By November 2015, an internet domain name for the new venture had been
 16 registered. And by January 2016, Mr. Levandowski had confided in some Waymo colleagues that
 17 he planned to "replicate" Waymo's technology at a Waymo competitor. As Waymo would later
 18 learn, Mr. Levandowski went to great lengths to take what he needed to "replicate" Waymo's
 19 technology and then to meet with Uber executives, all while still a Waymo employee.

20 43. On December 3, 2015, Mr. Levandowski searched for instructions on how to access
 21 Waymo's highly confidential design server. This server holds detailed technical information
 22 related to Waymo's LiDAR systems, including the blueprints for its key hardware components,
 23 and is accessible only on a need-to-know basis.

24 44. On December 11, 2015, Mr. Levandowski installed special software on his Waymo
 25 laptop to access the design server. Mr. Levandowski then download over 14,000 proprietary files

26 ³ Heather Somerville, "After a year, Carnegie Mellon and Uber research initiative is stalled,"
Reuters, Mar. 21, 2016, available at <http://www.reuters.com/article/us-uber-tech-research-idUSKCN0WN0WR>.

27 ⁴ Max Chafkin, "Uber's First Self-Driving Fleet Arrives in Pittsburgh This Month,"
Bloomberg, Aug. 18, 2016, available at <http://www.bloomberg.com/news/features/2016-08-18/uber-s-first-self-driving-fleet-arrives-in-pittsburgh-this-month-is06r7on>.
 28

1 from that server. Mr. Levandowski's download included 9.7 GBs of sensitive, secret, and
2 valuable internal Waymo information. 2 GBs of the download related to Waymo's LiDAR
3 technology. Among the downloaded documents were confidential specifications for each version
4 of every generation of Waymo's LiDAR circuit boards.

5 45. On December 14, 2015, Mr. Levandowski attached a removable media device (an
6 SD Card) to the laptop containing the downloaded files for approximately eight hours.

7 46. On December 18, 2015, seven days after Mr. Levandowski completed his
8 download of confidential Waymo information and four days after he removed the SD Card, he
9 reformatted the laptop, attempting to erase any evidence of what happened to the downloaded
10 files. After wiping the laptop clean, Mr. Levandowski used the reformatted laptop for a few
11 minutes and then never used it again.

12 47. Around the same time, Mr. Levandowski used his Waymo credentials and security
13 clearances to download additional confidential Waymo documents to a personal device. These
14 materials included at least five highly sensitive internal presentations containing proprietary
15 technical details regarding the manufacture, assembly, calibration, and testing of Waymo's LiDAR
16 sensors.

17 48. After downloading all of this confidential information regarding Waymo's LiDAR
18 systems and other technology and while still a Waymo employee, Waymo is informed and
19 believes that Mr. Levandowski attended meetings with high-level executives at Uber's
20 headquarters in San Francisco on January 14, 2016.

21 49. The next day, January 15, 2016, Mr. Levandowski's venture 280 Systems - which
22 became OttoMotto LLC - was officially formed (though it remained in stealth mode for several
23 months). On January 27, 2016, Mr. Levandowski resigned from Waymo without notice. And on
24 February 1, 2016, Mr. Levandowski's venture Otto Trucking was officially formed (also
25 remaining in stealth mode for several months).

E. Otto Continues To Misappropriate Waymo's Intellectual Property After Its Public Launch With Mr. Levandowski At The Helm

50. Otto publicly launched in May 2016 with the stated goal of developing hardware and software for autonomous vehicles.

51. In July 2016, a Waymo supply chain manager resigned from Waymo and joined Otto. This supply chain manager was one of several Waymo employees who had spent many months vetting a particular vendor that Waymo ultimately engaged to provide manufacturing services for its self-driving car technology. The vendor's identity and its work for Waymo was and is confidential: Waymo and the vendor entered into a confidentiality agreement that precludes either party from disclosing the existence of their business relationship.

52. Approximately a month before the supply chain manager resigned and despite his confidentiality obligations to Waymo, he downloaded from Waymo's secure network Waymo's confidential supply chain information and other confidential manufacturing information, including Statements of Work (or SOWs) for particular components – all of which reflected the results of Waymo's months-long, resource-intensive research into suppliers for highly specialized LiDAR sensor components.

53. Also in July 2016, a certain Waymo hardware engineer resigned. On the same day that he resigned from Waymo, and despite his confidentiality obligations to Waymo, this engineer downloaded from Waymo's secure network three files containing confidential research into various potential hardware vendors for highly specialized LiDAR components and manufacturing services. On information and belief, this hardware engineer left Waymo to join Otto.

54. In the same time period that these former Waymo employees were downloading Waymo's confidential information regarding its manufacturing and hardware vendors and resigned, Otto contacted the most-extensively vetted (and confidential) Waymo vendor and attempted to order manufacturing services for LiDAR components similar to those the vendor provides to Waymo.

F. After Only Six Months Of Official Existence, Otto Is Acquired By Uber For More Than Half A Billion Dollars

55. In August 2016, shortly after Mr. Levandowski received his final multi-million dollar payment from Google, Uber announced a deal to acquire Otto. Otto's purchase price was reported as \$680 million, a remarkable sum for a company with few assets and no marketable product. As *Forbes* reported at the time, "one of the keys to this acquisition[] could be the LIDAR system that was developed in-house at Otto."⁵

56. In recognition of the central role of Otto's technology within Uber, Uber named Otto co-founder Mr. Levandowski as its vice president in charge of Uber's self-driving car project. Uber rechristened Otto's existing San Francisco office as Uber's new self-driving research and development center.

G. Waymo Verifies Its Growing Suspicion That Otto And Uber Stole Its Intellectual Property

57. The sudden resignations from Waymo, Otto's quick public launch with Mr. Levandowski at the helm, and Uber's near-immediate acquisition of Otto for more than half a billion dollars all caused Waymo grave concern regarding the possible misuse of its intellectual property. Accordingly, in the summer of 2016, Waymo investigated the events surrounding the departure of Waymo employees for Otto and ultimately discovered Mr. Levandowski's 14,000-document download, his efforts to hide the disposition of those documents, and the downloading of other Waymo confidential materials by Mr. Levandowski and other former Waymo employees.

58. Then, in December 2016, Waymo received evidence suggesting that Otto and Uber were actually using Waymo's trade secrets and patented LiDAR designs. On December 13, Waymo received an email from one of its LiDAR-component vendors. The email, which a Waymo employee was copied on, was titled OTTO FILES and its recipients included an email alias indicating that the thread was a discussion among members of the vendor's "Uber" team. Attached to the email was a machine drawing of what purported to be an Otto circuit board (the

⁵ Sarwant Singh, "Uber Acquiring Otto Could Be the Lead Domino: Autonomous Vehicles to Spur M&A Activity," *Forbes*, Aug. 24, 2016, available at <http://www.forbes.com/sites/sarwantsingh/2016/08/24/uber-acquiring-otto-could-be-the-lead-domino-autonomous-vehicles-to-spur-ma-activity/#337f0c0f65ae>.

1 “Replicated Board”) that bore a striking resemblance to – and shared several unique characteristics
 2 with – Waymo’s highly confidential current-generation LiDAR circuit board, the design of which
 3 had been downloaded by Mr. Levandowski before his resignation.

4 59. The Replicated Board reflects Waymo’s highly confidential proprietary LiDAR
 5 technology and Waymo trade secrets. Moreover, the Replicated Board is specifically designed to
 6 be used in conjunction with many other Waymo trade secrets and in the context of overall LiDAR
 7 systems covered by Waymo patents.

8 60. With greatly heightened suspicion that Otto and Uber were actually using Waymo’s
 9 intellectual property for their own purposes (and to Waymo’s detriment), Waymo endeavored to
 10 find a way to confirm whether Defendants were using Waymo’s patented and trade secret LiDAR
 11 designs. Ultimately, Waymo received such confirmation in response to a public records request it
 12 made to the Nevada Governor’s Office of Economic Development and Department of Motor
 13 Vehicles on February 3, 2016.

14 61. Among the documents Waymo received on February 9, 2016 in response to that
 15 request were submissions made by Otto to Nevada regulatory authorities. In one such submission,
 16 dated less than one month after the Otto acquisition and while Uber was refusing to publicly
 17 identify the supplier of its LiDAR system,⁶ Otto privately represented that it had “developed in
 18 house and/or currently deployed” an “[i]n-house custom built 64-laser” LiDAR system. This was
 19 the final piece of the puzzle: confirmation that Uber and Otto are in fact using a custom LiDAR
 20 system with the same characteristics as Waymo’s proprietary system.

21 **H. Waymo Has Been, And Will Be, Severely Harmed By Defendants’**
 22 **Infringement Of Waymo’s Patents And Misappropriation Of Waymo’s**
Confidential And Proprietary Trade Secret Information

23 62. Waymo developed its patented inventions and trade secrets at great expense, and
 24 through years of painstaking research, experimentation, and trial and error. If Defendants are not
 25 enjoined from their infringement and misappropriation, they will cause severe and irreparable
 26 harm to Waymo.

27 _____
 28 ⁶ Mike Murphy, “This is the week self-driving cars became real,” *Quartz*, Sept. 17, 2016,
 available at <https://qz.com/780606/this-is-the-week-self-driving-cars-became-real/>.

63. The markets for self-driving vehicles are nascent and on the cusp of rapid development. The impending period of drastic market growth, as autonomous car technology matures and is increasingly commercialized, will set the competitive landscape for the industry going forward. The growth, profitability, and even survival of individual firms will likely be determined by what happens in the next few years. Defendants' exploitation of stolen intellectual property greatly harms Waymo during this embryonic market formation process and deforms the creation of a fair and competitive industry. Allowing the conduct to continue, and awarding monetary compensation after the fact, will not sufficiently unravel the harm caused to Waymo directly and indirectly by Defendants' conduct.

64. With respect to Waymo's trade secrets, there is also the threat that Waymo's confidential and proprietary information will be disclosed by Defendants, which will destroy the trade secret value of the technology. This may occur either voluntarily by Defendants for its own publicity purposes or because a regulatory agency requires disclosure for permitting purposes.

65. With this action, Waymo seeks to vindicate its rights, prevent any further infringement of its patents, preclude any further misuse of its confidential, proprietary, and trade secret information, and obtain compensation for its damages and for Defendants' unjust enrichment resulting from their unlawful conduct.

FIRST CAUSE OF ACTION

Violation of Defense of Trade Secret Act (Against All Defendants)

66. Waymo incorporates all of the above paragraphs as though fully set forth herein.

67. Waymo owns and possesses certain confidential, proprietary, and trade secret information, as alleged above. One example of the trade secret information is reflected in printed circuit board designs contained in certain design files that Anthony Levandowski downloaded from Waymo's system. Various aspects of the printed circuit board designs for the current generation of Waymo's LiDAR system are Waymo's trade secrets, including the position and orientation of the laser diodes and photodetectors mounted on the printed circuit boards. Waymo's trade secret information also includes the selection, materials, size, position, and

1 orientation of optical elements that are used to manipulate and modify laser beams that are
2 transmitted and detected by Waymo's current generation LiDAR system. Waymo's trade secret
3 information further includes the resolution profile that is achieved through its proprietary
4 positioning and orientation of laser diodes and optical elements in its current generation LiDAR
5 system, and the know-how associated with using the resolution profile to accurately detect objects
6 in the environment. Another example of Waymo's trade secrets is the rate at which the current
7 generation LiDAR system pulses and fires the laser diodes into the environment, and the know-
8 how associated with using the pulse rate and fire rate to accurately detect objects in the
9 environment. None of these trade secrets is disclosed in any published Waymo patents or patent
10 applications.

11 68. Waymo's confidential, proprietary, and trade secret information relates to products
12 and services used, sold, shipped and/or ordered in, or intended to be used, sold, shipped and/or
13 ordered in, interstate or foreign commerce.

14 69. Waymo has taken reasonable measures to keep such information secret and
15 confidential.

16 70. Waymo has at all times maintained stringent security measures to preserve the
17 secrecy of its LiDAR trade secrets. For example, Waymo restricts access to confidential and
18 proprietary trade secret information to only those who "need to know." That is, employees
19 working on projects unrelated to self-driving cars have not had and do not have access to
20 Waymo's schematics, supply chain information, or other categories of confidential and proprietary
21 information. All networks hosting Waymo's confidential and proprietary information have been
22 and continue to be encrypted and have at all times required passwords and dual-authentication for
23 access. Computers, tablets, and cell phones provided to Waymo employees are encrypted,
24 password protected, and subject to other security measures. And Waymo secures its physical
25 facilities by restricting access and then monitoring actual access with security cameras and guards.

26 71. Waymo also requires all employees, contractors, consultants, vendors, and
27 manufacturers to sign confidentiality agreements before any confidential or proprietary trade
28 secret information is disclosed to them. Every outside vendor and manufacturer that has received

1 confidential and proprietary trade secret information related to Waymo's LiDAR technology has
2 executed at least one written non-disclosure agreement. As a further precaution, Waymo
3 purchases the components for its LiDAR systems from numerous, different vendors and conducts
4 the final assembly in-house at Waymo. As a result, no single Waymo vendor has full knowledge
5 of Waymo's proprietary LiDAR systems.

6 72. Due to these security measures, Waymo's confidential and proprietary trade secret
7 information is not available for others in the automated vehicle industry – or any other industry –
8 to use through any legitimate means.

9 73. Waymo's confidential, proprietary, and trade secret information derives
10 independent economic value from not being generally known to, and not being readily
11 ascertainable through proper means by, another person who could obtain economic value from the
12 disclosure or use of the information.

13 74. In violation of Waymo's rights, Defendants misappropriated Waymo's
14 confidential, proprietary and trade secret information in the improper and unlawful manner as
15 alleged herein. Defendants' misappropriation of Waymo's confidential, proprietary, and trade
16 secret information was intentional, knowing, willful, malicious, fraudulent, and oppressive.
17 Defendants have attempted and continue to attempt to conceal their misappropriation.

18 75. On information and belief, if Defendants are not enjoined, Defendants will continue
19 to misappropriate and use Waymo's trade secret information for their own benefit and to Waymo's
20 detriment.

21 76. As the direct and proximate result of Defendants' conduct, Waymo has suffered
22 and, if Defendants' conduct is not stopped, will continue to suffer, severe competitive harm,
23 irreparable injury, and significant damages, in an amount to be proven at trial. Because Waymo's
24 remedy at law is inadequate, Waymo seeks, in addition to damages, temporary, preliminary, and
25 permanent injunctive relief to recover and protect its confidential, proprietary, and trade secret
26 information and to protect other legitimate business interests. Waymo's business operates in a
27 competitive market and will continue suffering irreparable harm absent injunctive relief.
28

1 proprietary LiDAR designs, whereas Waymo's trade secrets include elements for subsequent and
2 as of today un-patented and confidential LiDAR designs; and (ii) Waymo's trade secrets include
3 specific parameters and measurements for Waymo's LiDAR designs that are not disclosed in any
4 asserted Waymo patents. Examples of trade secret information that is not covered or disclosed by
5 any asserted Waymo patents include the specific parameters or measurements for vertical beam
6 spacing, distribution of beam elevations and orientations, the beams' field of view measurements,
7 the pitch or orientations between diodes, pitch measurements for optical cavities, pulse rates, and
8 fire rates for beam returns.

9 81. Waymo has undertaken efforts that are reasonable under the circumstances to
10 maintain the secrecy of the trade secrets at issue. These efforts include, but are not limited to, the
11 use of passwords and encryption to protect data on its computers, servers, and source code
12 repositories, the maintenance of a Code of Conduct that emphasizes all employees' duties to
13 maintain the secrecy of Waymo's confidential information, and the use of confidentiality
14 agreements and non-disclosure agreements to require vendors, partners, contractors, and
15 employees to maintain the secrecy of Waymo's confidential information.

16 82. Defendants knew or should have known under the circumstances that the
17 information misappropriated by Defendants were trade secrets.

18 83. Defendants misappropriated and threaten to further misappropriate trade secrets at
19 least by acquiring trade secrets with knowledge of or reason to know that the trade secrets were
20 acquired by improper means, and Defendants are using and threatening to use the trade secrets
21 acquired by improper means without Waymo's knowledge or consent.

22 84. As a direct and proximate result of Defendants' conduct, Waymo is threatened with
23 injury and has been injured in an amount in excess of the jurisdictional minimum of this Court and
24 that will be proven at trial. Waymo has also incurred, and will continue to incur, additional
25 damages, costs and expenses, including attorney's fees, as a result of Defendants'
26 misappropriation. As a further proximate result of the misappropriation and use of Waymo's trade
27 secrets, Defendants were unjustly enriched.

85. The aforementioned acts of Defendants were willful, malicious and fraudulent. Waymo is therefore entitled to exemplary damages under California Civil Code § 3426.3(c).

86. Defendants' conduct constitutes transgressions of a continuing nature for which Waymo has no adequate remedy at law. Unless and until enjoined and restrained by order of this Court, Defendants will continue to retain and use Waymo's trade secret information to enrich themselves and divert business from Waymo. Pursuant to California Civil Code § 3426.2, Waymo is entitled to an injunction against the misappropriation and continued threatened misappropriation of trade secrets as alleged herein and further asks the Court to restrain Defendants from using all trade secret information misappropriated from Waymo and to return all trade secret information to Waymo.

87. Pursuant to California Civil Code § 3426.4 and related law, Waymo is entitled to an award of attorneys' fees for Defendants' misappropriation of trade secrets.

THIRD CAUSE OF ACTION

Infringement of Patent No. 8,836,922 (Against All Defendants)

88. Waymo incorporates all of the above paragraphs as though fully set forth herein.

89. The '922 patent, entitled "Devices and Methods for a Rotating LIDAR platform with a Shared Transmit/Receive Path," was duly and lawfully issued on September 16, 2014. A true and correct copy of the '922 patent is attached to this Complaint as Exhibit A.

90. Waymo is the owner of all rights, title, and interest in the '922 patent, including the right to bring this suit for injunctive relief and damages.

91. The '922 patent is valid and enforceable.

92. Defendants have infringed, and continue to infringe, literally and/or through the doctrine of equivalents, one or more claims of the '922 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within the United States, without authority, certain LiDAR devices ("Accused LiDAR Devices").

93. On information and belief, the Accused LiDAR Devices, such as those using the Replicated Board, comprise a LiDAR device with a single lens that transmits light pulses

1 originating from one or more light sources and receiving light pulses that are then detected by one
2 or more detectors. Defendants infringe at least claim 1 of the '922 patent for at least the following
3 reasons:

4 94. Defendants' Accused LiDAR Devices are LiDAR devices.

5 95. On information and belief, Defendants' Accused LiDAR Devices have a lens
6 mounted to a housing, wherein the housing is configured to rotate about an axis and has an interior
7 space that includes a transmit block, a receive block, a transmit path, and a receive path, wherein
8 the transmit block has an exit aperture in a wall that comprises a reflective surface, wherein the
9 receive block has an entrance aperture, wherein the transmit path extends from the exit aperture to
10 the lens, and wherein the receive path extends from the lens to the entrance aperture via the
11 reflective surface.

12 96. On information and belief, Defendants' Accused LiDAR Devices have a plurality
13 of light sources in the transmit block, wherein the plurality of light sources are configured to emit
14 a plurality of light beams through the exit aperture in a plurality of different directions, the light
15 beams comprising light having wavelengths in a wavelength range.

16 97. On information and belief, Defendants' Accused LiDAR Devices have a plurality
17 of detectors in the receive block, wherein the plurality of detectors are configured to detect light
18 having wavelengths in the wavelength range.

19 98. On information and belief, Defendants' Accused LiDAR Devices have a lens that is
20 configured to receive the light beams via the transmit path, collimate the light beams for
21 transmission into an environment of the LIDAR device, collect light comprising light from one or
22 more of the collimated light beams reflected by one or more of the collimated light beams
23 reflected by one or more objects in the environment of the LIDAR device, and focus the collected
24 light onto the detectors via the receive path.

25 99. Defendants' infringement of the '922 patent has been willful and deliberate because
26 Defendants knew or should have known about the '922 patent and their infringement of that patent
27 but acted despite an objectively high likelihood that such acts would infringe the patent. On
28 information and belief, at least three of the individuals who developed the Accused LiDAR

1 Devices are named inventors of the '922 patent who – while Waymo employees, and on behalf of
 2 Waymo, which owns the '922 patent – were involved in the conception and/or reduction to
 3 practice of the '922 patent and have had knowledge of the patent since it issued in September
 4 2014.

5 100. As the direct and proximate result of Defendants' conduct, Waymo has suffered
 6 and, if Defendants' conduct is not stopped, will continue to suffer, severe competitive harm,
 7 irreparable injury, and significant damages, in an amount to be proven at trial. Because Waymo's
 8 remedy at law is inadequate, Waymo seeks, in addition to damages, temporary, preliminary, and
 9 permanent injunctive relief. Waymo's business operates in a competitive market and will continue
 10 suffering irreparable harm absent injunctive relief.

11 **FOURTH CAUSE OF ACTION**

12 **Infringement of Patent No. 9,368,936** 13 **(Against All Defendants)**

14 101. Waymo incorporates all of the above paragraphs as though fully set forth herein.

15 102. The '936 patent, entitled "Laser Diode Firing System," was duly and lawfully
 16 issued on June 14, 2016. A true and correct copy of the '936 patent is attached to this Complaint
 17 as Exhibit B.

18 103. Waymo is the owner of all rights, title, and interest in the '936 patent, including the
 19 right to bring this suit for injunctive relief and damages.

20 104. The '936 patent is valid and enforceable.

21 105. Defendants have infringed, and continue to infringe, literally and/or through the
 22 doctrine of equivalents, one or more claims of the '936 patent, including but not limited to claim
 23 1, pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing
 24 within the United States, without authority, the Accused LiDAR devices.

25 106. On information and belief, Defendants' Accused LiDAR Devices, such as those
 26 using the Replicated Board, comprise a laser diode firing circuit for a LiDAR device, which
 27 utilizes an inductor and a charging capacitor, where both the charging and discharge path are
 28

1 controllable via a single transistor and gate signal. Defendants infringe at least claim 1 of the '936
2 patent for at least the following reasons:

3 107. On information and belief, Defendants' Accused LiDAR Devices have a voltage
4 source.

5 108. On information and belief, Defendants' Accused LiDAR Devices have an inductor
6 coupled to the voltage source, wherein the inductor is configured to store energy in a magnetic
7 field.

8 109. On information and belief, Defendants' Accused LiDAR Devices have a diode or
9 equivalent coupled to the voltage source via the inductor.

10 110. On information and belief, Defendants' Accused LiDAR Devices have a transistor
11 configured to be turned on and turned off by a control signal.

12 111. On information and belief, Defendants' Accused LiDAR Devices have a light
13 emitting element coupled to the transistor.

14 112. On information and belief, Defendants' Accused LiDAR Devices Circuit Boards
15 have a capacitor coupled to a charging path and a discharge path, wherein the charging path
16 includes the inductor and the diode, and wherein the discharge path includes the transistor and the
17 light emitting element.

18 113. On information and belief, Defendants' Accused LiDAR Devices have, responsive
19 to the transistor being turned off, a capacitor configured to charge via the charging path such that a
20 voltage across the capacitor increases from a lower voltage level to a higher voltage level and an
21 inductor configured to release energy stored in the magnetic field such that a current through the
22 inductor decreases from a higher current level to a lower current level.

23 114. On information and belief, Defendants' Accused LiDAR Devices have, responsive
24 to the transistor being turned on, a capacitor configured to discharge through the discharge path
25 such that the light emitting element emits a pulse of light and the voltage across the capacitor
26 decreases from the higher voltage level to the lower voltage level and the inductor is configured to
27 store energy in the magnetic field such that the current through the inductor increases from the
28 lower current level to the higher current level.

115. As the direct and proximate result of Defendants' conduct, Waymo has suffered and, if Defendants' conduct is not stopped, will continue to suffer, severe competitive harm, irreparable injury, and significant damages, in an amount to be proven at trial. Because Waymo's remedy at law is inadequate, Waymo seeks, in addition to damages, temporary, preliminary, and permanent injunctive relief. Waymo's business operates in a competitive market and will continue suffering irreparable harm absent injunctive relief.

FIFTH CAUSE OF ACTION

Infringement of Patent No. 9,086,273 (Against All Defendants)

116. Waymo incorporates all of the above paragraphs as though fully set forth herein.

117. The '273 patent, entitled "Microrod Compression of Laser Beam in Combination with Transmit Lens," was duly and lawfully issued on July 21, 2015. A true and correct copy of the '273 patent is attached to this Complaint as Exhibit C.

118. Waymo is the owner of all rights, title, and interest in the '273 patent, including the right to bring this suit for injunctive relief and damages.

119. The '273 patent is valid and enforceable.

120. Defendants have infringed, and continue to infringe, literally and/or through the doctrine of equivalents, one or more claims of the '273 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within the United States, without authority, the Accused LiDAR Devices.

121. On information and belief, Defendants' Accused Lidar Devices, such as those using the Replicated Board and the Uber Custom LiDAR described in Uber's Nevada regulatory filing, comprise a LiDAR device with a single lens that both (i) collimates the light from one or more light sources to provide collimated light for transmission into an environment of the LiDAR device, and (ii) focuses the reflected light onto one or more photodetectors, and with cylindrical lenses associated with each laser diode that pre-collimate the uncollimated laser beam. Defendants infringe at least claim 1 of the '273 patent for at least the following reasons:

1 122. On information and belief, Defendants' Accused LiDAR Devices are LiDAR
2 devices.

3 123. On information and belief, Defendants' Accused LiDAR Devices have at least one
4 laser diode, wherein the at least one laser diode is configured to emit an uncollimated laser beam
5 comprising light in a narrow wavelength range, wherein the uncollimated laser beam has a first
6 divergence in a first direction and a second divergence in a second direction, and wherein the first
7 divergence is greater than the second divergence.

8 124. On information and belief, Defendants' Accused LiDAR Devices have at least one
9 cylindrical lens, wherein the at least one cylindrical lens is configured to pre-collimate the
10 uncollimated laser beam that has a third divergence in the first direction and a fourth divergence in
11 the second direction, wherein the third divergence is less than the fourth divergence and the fourth
12 divergence is substantially equal to the second divergence.

13 125. On information and belief, Defendants' Accused LiDAR Devices have at least one
14 detector, wherein the at least one detector is configured to detect light having wavelengths in the
15 narrow wavelength range.

16 126. On information and belief, Defendants' Accused LiDAR Devices have an objective
17 lens, wherein the objective lens is configured to (i) collimate the partially collimated laser beam
18 for transmission into an environment of the LiDAR device and (ii) focus object reflected light onto
19 the at least one detector, wherein the object-reflected light comprises light from the collimated
20 laser beam in the environment of the LiDAR device.

21 127. Defendants' infringement of the '273 patent has been willful and deliberate because
22 Defendants knew or should have known about the '273 patent and their infringement of that patent
23 but acted despite an objectively high likelihood that such acts would infringe the patent. At least
24 one individual who developed the Accused LiDAR Devices is a named inventor on the '273 patent
25 who – while a Waymo employee, and on behalf of Waymo, which owns the '273 patent – was
26 involved in the conception and/or reduction to practice of the '273 patent and therefore has had
27 knowledge of the patent since it issued in July 21, 2015.

28

1 135. Judgment in Waymo's favor and against Defendants on all causes of action alleged
2 herein;

3 136. For damages in an amount to be further proven at trial, including trebling of all
4 damages awarded with respect to infringement of the '922 and '273 patents;

5 137. For preliminary and permanent injunctive relief;

6 138. For judgment that this is an exceptional case;

7 139. For punitive damages;

8 140. For restitution;

9 141. For costs of suit incurred herein;

10 142. For prejudgment interest;

11 143. For attorneys' fees and costs; and

12 144. For such other and further relief as the Court may deem to be just and proper.

13 **DEMAND FOR JURY TRIAL**

14 Waymo hereby demands trial by jury for all causes of action, claims, or issues in this
15 action that are triable as a matter of right to a jury

16 DATED: February 23, 2017

QUINN EMANUEL URQUHART & SULLIVAN,
LLP

17 By /s/ Charles K. Verhoeven

18 Charles K. Verhoeven

19 Attorneys for WAYMO LLC
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